

## A REVAMPED CHARTING ENGINE

After fifteen years, the charting engine in Office 2007 has been completely rewritten. You will be able to create modern-looking charts in just a few mouse clicks. Tools for customizing the chart have been promoted to one of three new Charting Tools ribbon tabs.

The basic row-and-column worksheet grid is essential in helping you organize data and perform calculations, but it's difficult—and sometimes impossible—to analyze information and see patterns by staring at a sea of numbers.

Charts help you turn numeric data into visual displays in which you can identify trends and pick out patterns at a glance. By using lines, columns, bars, and pie slices to compare series of data over time and across categories, charts often provide clear answers to tough questions, such as these:

- **Which sales region and which product lines have been most successful in the past 12 months?**—A stacked column chart lets you see both sets of data in a single display.
- **Does your small business have seasonal variations in cash flow or inventory?**—You might not be able to tell from an accounting statement packed with hundreds of individual data points, but a line chart can help you clearly see the highs and lows.
- **Just where does the money go?**—If you've broken out a year's worth of expenditures by category, a pie chart helps you see which categories are taking more than their fair share—and devise strategies for reining in those expenses.

## BUILDING AN EXCEL CHART

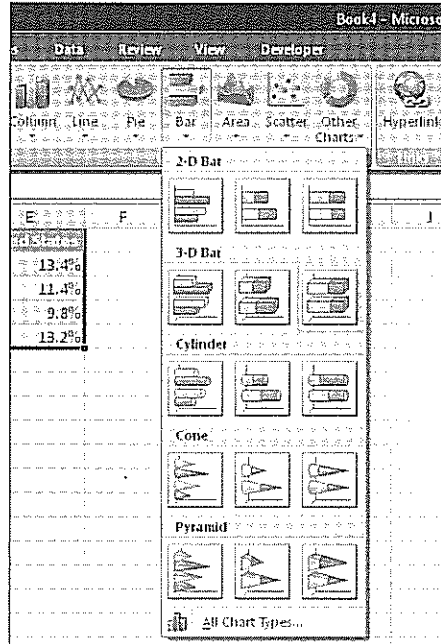
Building a chart in Excel 2007 is easier than in any previous version. Gone is the four-step Chart Wizard. To create a chart, you select a cell within your data range and choose a chart type on the Insert tab of the ribbon. As shown in Figure 22.1, the Insert tab offers seven charting icons. Each icon leads to a drop-down list with a variety of chart styles.

Click a chart style from the drop-down list and Excel will add a default chart to your worksheet. You can then use buttons on the Design, Layout, and Format tabs to customize and tweak the options for the chart.

By default, all new Excel charts are embedded on the current worksheet. If you would like to move the chart to its own chart sheet, you can do this with the location button on the Design tab of the ribbon. Working with a chart on its own sheet gives you the maximum working room for editing and formatting. Embedding a chart within a worksheet lets you easily see the data and chart side by side.

Excel automatically maintains links between worksheet data and its graphic representation on the chart; if you change the numbers or text in the data range, the columns, pie slices, and other graphic elements on the chart change, too.

**Figure 22.1**  
The 7 chart type icons  
lead to 73 basic chart  
types.



## SELECTING DATA TO PLOT

Excel maintains links between worksheet data and the data series on a chart. When you create a chart, Excel automatically detects the data to be charted based on the current selection. If you select a single cell, Excel bases the chart data on the current region—an area that extends in each direction until you encounter the edge of the worksheet or a blank row or blank column. On the other hand, if you select a range of cells, Excel uses that range for the chart data.

### NOTE

The number of points per series for a 2D chart is limited to 32,000. With 3D charts, the limit is reduced to 4,000 points per series. The total number of points per chart is limited to 256,000. The maximum number of series you can use in a chart is 255. If you have more series than this, you must filter your list before creating your chart. You should also seriously reconsider the point you're trying to make because even Stephen Hawking would have trouble absorbing that much information at once.

Be sure the range you select includes all the data to be charted, as well as the labels you'll use for the categories. The range does not have to be contiguous. For example, to create a pie chart, you might want to select a row of column labels and a row of totals, ignoring the detail rows in between. Nor do you need to select all the data in a table, if all you want to chart is a subset of the data. For example, on a 12-month budget worksheet, you might want to show sales totals only for the months of October through December.

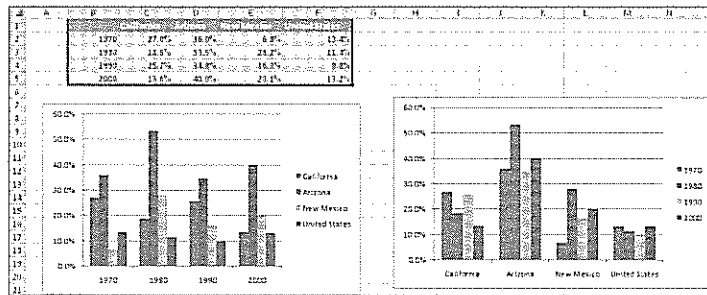
## CAUTION

If the range you plan to chart ends with a row or column of totals, don't include those totals in your selection; otherwise, the totals will create one column or pie slice that overwhelms all the others in the chart.

When you select the data source, Excel attempts to identify category headings, value axis labels, and data series; it also chooses whether to plot data by rows or by columns. This choice is based on the number of items—if there are more columns than rows, Excel plots the data by column, placing the column headings along the category axis. If there are more rows than columns, or an equal number of rows and columns, Excel plots by row.

Changing the way data is plotted can help emphasize different trends and patterns. For example, Figure 22.2 shows a worksheet that contains a small range of data. When plotted by columns (left), the data emphasizes the trends for each decade, and you can see at a glance that Arizona has grown at a faster rate than the other two southwestern states and faster than the United States as a whole. When plotted by rows, however (right), the chart encourages comparing how each state and the United States did on a decade-by-decade basis and to draw conclusions on the consistency of each state's growth.

**Figure 22.2**  
Changing the way that data is plotted—by columns or rows—can change the story a chart tells.



To reverse the order in which Excel plots the selected data, use the Switch Row/Column icon on the Chart Tools Design tab of the ribbon. (If this tab is not visible, select a chart to display it.) With some chart types and data, making this switch could render the chart incomprehensible; click the Undo button if that happens.

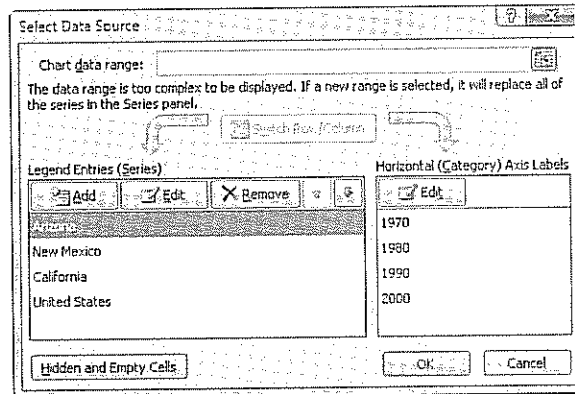
## CAUTION

While changing the data orientation can cause a chart to tell a different story, you should always make sure that you understand the story. If you tweak a chart to try to obscure the true story, you might get in trouble if someone in the audience knows the real story. Analyze the chart to make sure that you, the chart author, understands the data before distributing the chart to others.

Normally, Excel plots data series from left to right and top to bottom. What do you do if your data source is arranged in alphabetical order, but you want to display the series in a different order—for instance, with the two most productive regions listed first, or with dates in reverse order? If you don't want to change the arrangement of data on the worksheet, you can change the plotting order of the data series:

1. Click the chart. Excel will display the three Chart Tools ribbon tabs.
2. On the Design ribbon, click the Select Data icon. Excel displays the Select Data Source dialog box.
3. Click any series name in the Legend Entries list. Use the Up or Down arrow icons to re-order the series in the list (see Figure 22.3).
4. Repeat step 3 to resequence additional series.
5. Click OK to accept the changes. Note: Live Preview does not work with this dialog box. You must click OK before the changes are shown in the chart.

**Figure 22.3**  
Resequence the  
series order using  
this dialog box.



## SELECTING A CHART TYPE

When you create a new chart, Excel lets you select from 73 chart types in 14 categories (although a significant number of these choices are minor variations of others in the same category). Excel 2007 does away with the gallery of 20 built-in custom chart types. Instead, Excel 2007 offers 5 to 15 built-in custom layouts for each chart type. The type of data you're planning to plot usually dictates which type of chart you should choose.

## CHOOSING A STANDARD CHART TYPE

When you use the Insert tab to create a chart, the first step is to specify what type of chart you want to create. After you create a chart, you can easily change it to a new type; right-click the chart area or plot area and select Change Chart Type, or click the Change Chart Type button on the Design tab of the ribbon. The following sections discuss all the standard Excel chart types and describe how you can best use them.

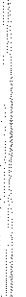
### COLUMN

This type of chart shows a comparison between values in one or more series, often over time as shown in Figure 22.4. This chart works best for shorter series of data. It works well to track 10 data points, but not to illustrate 1000 data points. For example, you can show how your company's sales compare with its competitors over the past five years. Stacked column charts further divide the total for each column, so you can also measure how each

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